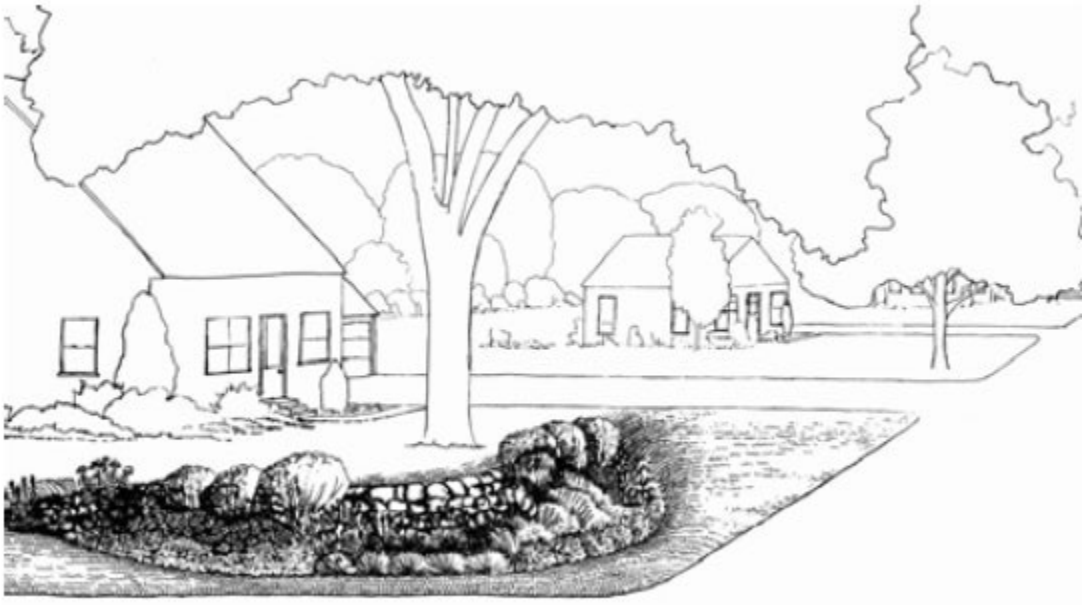
Rain Gardens: A Way to Improve Water Quality

What are rain gardens?

When rain falls on natural areas such as a forest or meadow, it is slowed down, filtered by soil and plants, and allowed to soak back into the ground. When rain falls on impervious surfaces such as rooftops, roads, parking lots and driveways, rain does not soak into the ground and storm water runoff is created. Stormwater runoff picks up pollution such as fertilizer, pesticides, sediment, motor oil, litter, pet and yard waste. In many Massachusetts towns, stormwater runoff does not go to a treatment plant. Instead, water and the pollution in it flows directly into storm drains, which eventually can deliver these pollutants to bodies of water.

Rain gardens are attractive, functional landscaped areas designed to capture and filter stormwater before it runs off into storm drains. They collect water in natural or constructed shallow vegetated depressions and allow it to soak into the ground slowly. This reduces the potential for erosion and minimizes the amount of pollutants flowing from a yard into a storm drain, and ultimately into our waterways. They may also be used as a buffer in shoreline areas to capture runoff from the home landscape before it enters a lake, pond, river or estuary.



Minnesota Urban Small Sites BMP Manual

Rain gardens use the concept of bioretention, a water quality practice in which plants and soils filter pollutants from stormwater. By reducing stormwater runoff, rain gardens can be a valuable tool to help protect our water resources. While an individual rain garden may seem like a small thing, collectively they produce substantial neighborhood and community environmental benefits.

By capturing runoff in shallow depressions and letting it soak into the ground, rainwater gardens also help recharge stores of groundwater in aquifers. Moreover, they filter out sediment and other pollutants by catching close to the first inch of runoff, which contains the highest concentration of pollutants. Rain gardens transform stormwater from a destructive carrier of pollution into a source of sustenance for plant and wildlife habitats: the plants thrive on nitrogen and phosphorus that is picked up, while their stems trap sediment. Rainwater gardens are being incorporated into many new and existing areas for their environmental benefits, as well as their natural beauty.

What makes a rain garden a rain garden?

A rain garden resembles a regular perennial garden or mixed border in many ways. It is designed with deep-rooted plants that come back year after year; it is pretty to look at; it often has lovely flowers, grasses, trees and shrubs. So what makes it different from any other perennial garden? There are certain qualities that make a rain garden unique:

- Rain gardens have a ponding area, but they are not ponds. They often are planted with wetland plants, but they are not wetlands (although you can design a rain garden that mimics a wetland).
- The garden absorbs and filters rain that would otherwise run off your property and down the storm drain.
- Many of the plants in the garden might be native to the region and have extensive deep roots that help the garden absorb rain. The native plants do not need special attention once they are established. Non-native plants may be used as long as they are also non-invasive and pest free.
- There is a bowl-shaped dip in the garden, which holds the rain while it soaks into the soil.
- The garden bed is prepared or sometimes replaced to a depth of up to two feet in order to relieve soil compaction and make the garden able to absorb water.

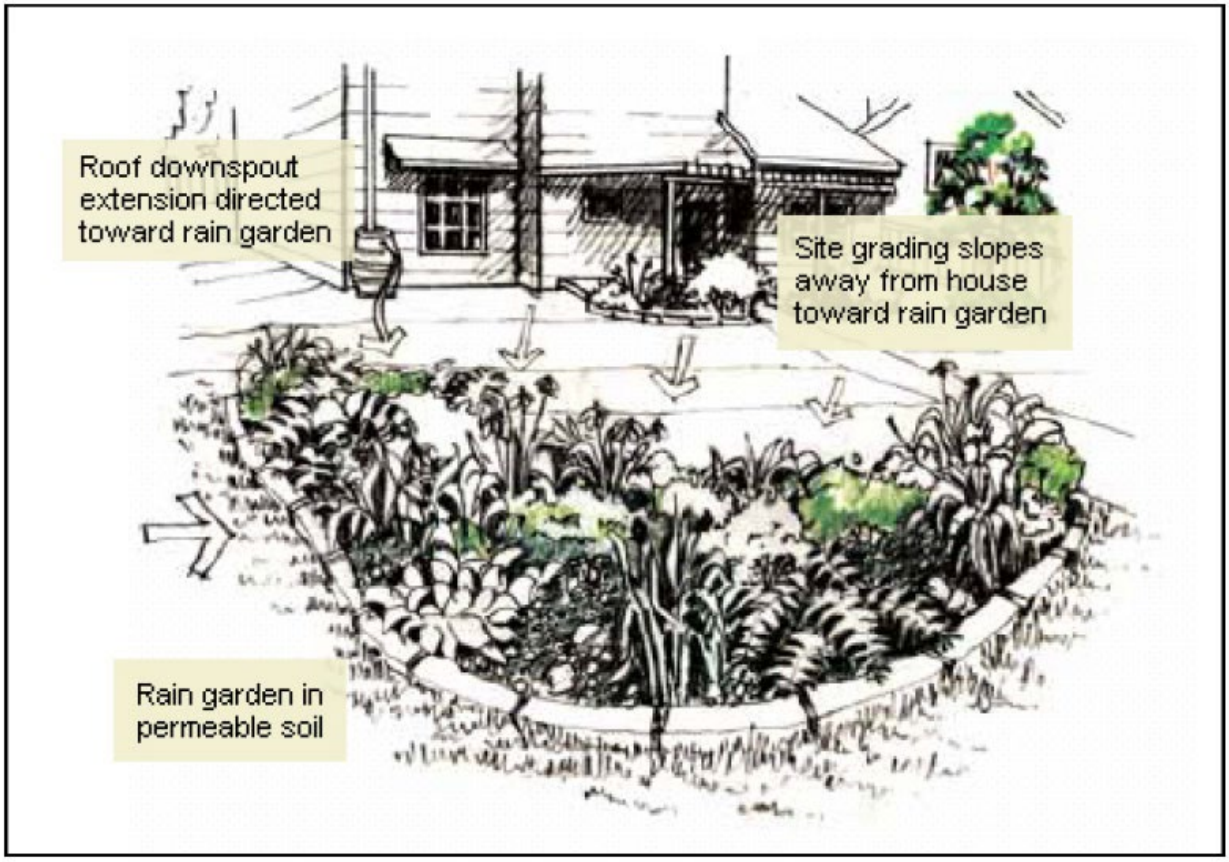
A garden that does not have rain directed into it from a hard surface of your property will still be a valuable asset. However, unless stormwater runoff is directed into the garden, it is not a rain garden. In addition to reducing and filtering stormwater runoff and increasing groundwater recharge, rain gardens provide many other benefits. They provide habitat for wildlife and, with the proper selection of plants, increase the number and diversity of birds and butterflies for those who enjoy watching them. Rain gardens provide an attractive and creative alternative to traditional lawn landscapes and require less maintenance because they do not need to be mowed, fertilized, or watered once established. They may also increase property values with creative landscaping designs.

Locating the rain garden

Place rain gardens near your home to catch runoff from your roof, or farther out in your lawn to collect surface water draining across your property. Examine your yard while it is raining to discover the drainage pattern on your property. Find out where runoff flows and locate areas where water collects. If the rain does not flow naturally to your chosen spot, you can install piping underground or send the rain along a constructed channel or swale. Typically, the largest sources of runoff are rooftops, paved surfaces, slopes, and compacted soils. Some helpful tips are listed below to help you determine the best location for your rain garden:

- Rain gardens should be a minimum of ten feet from your home and your neighbors' homes, to prevent damage from water seepage.
- Rain gardens should not be placed over or near the drain field of a septic system.
- Because these areas are already poorly drained, rain gardens should not be placed in an area of your yard where water collects. They should be placed up-slope of these areas to reduce the amount of water that flows into them.
- Sunny or partly sunny locations are best for rain gardens, but shade gardens are possible.
- Rain gardens should be integrated with your landscape. They can have a formal or informal look based on your preference.
- Rain gardens should not be installed under large trees. Trees have extensive root systems that may be damaged in the garden excavation process. In addition, they may not be able to adapt to the extra moisture being held by your rain garden.
- Make yourself aware of underground service lines or utilities. Call "Dig Safe" at 1-800-344-7233 for information about underground utilities.

Consider how the rain garden will fit in the overall landscape when looking for a location. Determine if you want it near outdoor gathering places where the beauty of the plants can be appreciated. Look out of your windows to see what views the rain garden can provide. The rain garden is more than just a stormwater management tool; it will be an integral part of your landscape.



Once you select a location, you may decide to send additional water to this site. Use flexible plastic pipe to direct water from downspouts and collecting areas to the rain garden. Be sure to factor this additional water flow into your garden sizing calculations.

Soils and drainage

Rain gardens work best when constructed in well-drained or sandy soils, but they can also be installed on sites with less permeable soils such as clays. Your rain garden needs to be able to absorb the water coming off your roof and driveway. Sandy soils drain well, while clay soils may become waterlogged. If your soil is sandy, you may be able to simply loosen the soil and improve it with some compost to prepare your rain garden for planting. If your soil is clay, you will have more work to do. Even light clay soils may create drainage problems if a lot of water is directed to the rain garden. Soil removal and replacement may be needed if your soil is clay. The recommended soil replacement mix is 50-60% sand, 20-30% topsoil, and 20-30% compost. Be sure no clay is in your replacement soil.
You can test your soil's infiltration rate by digging a hole 8 inches wide and 8 inches deep. Fill it with water and see how long it takes to sink in. The water needs to go down an inch per hour. If it takes longer than that, you will need to do additional site preparation to improve infiltration.
There are three signs of an impermeable soil:

- The site ponds water or remains saturated for several days after a storm event.
- The soil shows signs of being a wetland soil (gray soil with ribbons or areas of brown color) within 1 foot of the surface.
- Water poured in the test hole is still there after two days, provided it has not rained.

If you see any of these signs, your garden will need to be designed as a backyard wetlands garden, or another location should be selected. Otherwise, your site is suitable for a rain garden.

How large should the rain garden be?

Rain gardens can be large or small – the size depends primarily on the site drainage area. The volume of water collected will be roughly equivalent to the amount of rain falling on impervious areas draining to the garden location, such as driveways, rooftops, and lawns (if included in the drainage area). To determine the volume of runoff to be collected, first determine the square footage of the surfaces that will provide the flow into the garden. If a gutter downspout will run directly into the garden, the only information that you will need is the area of the roof that contributes to that gutter. Measure the footprint of your house (the area taken up by your house if you were looking down from above). Then estimate how much of this area actually contributes to the gutter downspout. In other words, if it were raining, what portion of the roof area would be contributing water to the garden? Next, divide this area by 6. This calculation sizes the garden to hold one inch of roof runoff in a garden 6 inches deep. For example, suppose a house has a footprint of 60 feet x 30 feet, or 1800 ft^2. One quarter of the roof area contributes to the gutter near where the rain garden is to be built. Therefore, the contributing area would be 1800 ft^2 x 0.25 = 450 ft^2. This area is then divided by 6, so that the square footage of the rain garden would be 450 ft^2 / 6 = 75 ft^2. A nicely shaped rain garden might be 10 ft x 7.5 ft. However, you have the flexibility to make it any shape you want, as long as you approximate the size. With silty soils, the size can be increased about 50%. If the soils are clayey, the size can be increased up to 100%. This increase will provide the same amount of treatment as if your soils were sandy. If you are including runoff from driveways or lawn areas, be sure to calculate the square footage and add that to the total to get the correct size needed. Once you have determined the total drainage area for your rain garden, use the following chart to determine possible rain garden dimensions. Dimensions are given for ponding depths of 6 inches and 3 inches. A good rule of thumb is that the rain garden should be about twice as long (perpendicular to the slope) as it is wide.

Drainage Area	Required Size of Rain Garden (6" deep)	Potential Rain Garden Dimensions (ft x ft)	Required Size of Rain Garden (3" deep)	Potential Rain Garden Dimensions (ft x ft)
800 ft^2	40 ft^2	4x10, 5x8, 6x7	80 ft^2	7x12, 8x10, 9x9
1000 ft^2	50 ft^2	5x10, 6x8	100 ft^2	7x15, 10x10
1200 ft^2	60 ft^2	4x15, 5x12, 6x10, 8x8	120 ft^2	10x12, 8x15
1400 ft^2	70 ft^2	5x14, 7x10	140 ft^2	10x14, 7x20
1600 ft^2	80 ft^2	7x12, 8x10, 9x9	160 ft^2	8x20, 10x16
1800 ft^2	90 ft^2	6x15, 7x13, 8x12, 9x10	180 ft^2	9x20, 10x18, 12x15
2000 ft^2	100 ft^2	7x15, 10x10	200 ft^2	10x20, 14x15
2500 ft^2	125 ft^2	8x16, 10x13	250 ft^2	10x25, 13x20, 15x17
3000 ft^2	150 ft^2	10x15, 12x13	300 ft^2	10x30, 15x20
3500 ft^2	175 ft^2	8x16, 10x13	350 ft^2	14x25, 18x20
4000 ft^2	200 ft^2	9x20, 12x15	400 ft^2	16x25, 20x20
5000 ft^2	250 ft^2	10x25, 13x20, 15x17	500 ft^2	20x25

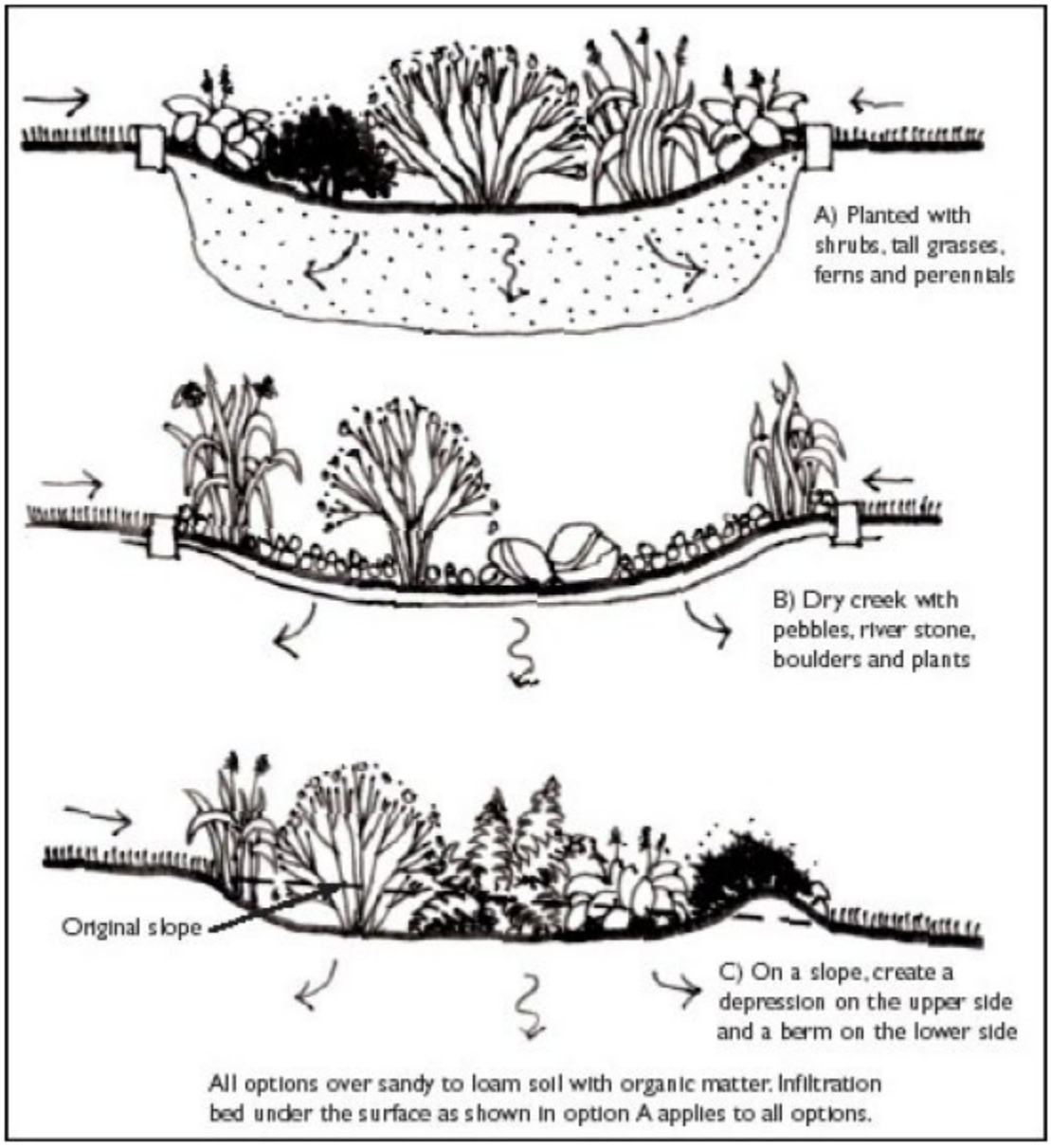
Installing the rain garden

Once you feel confident in the placement of the garden, lay out the shape to define where to dig. Outline the area of the proposed garden by spraying with non-toxic soccer-field paint. Another method is to lay a hose along the shape of the garden, then dig along the hose. This gives a nice flowing border to the garden area. Alternatively, you could simply choose a rectangle as the shape of your garden.

If the yard is fairly level, you can just dig out the bowl to the proper depth, which is 6 inches deep, or a couple of inches deeper if mulch will be used. If the yard is sloped, you may need to construct a small berm (mound) at the down-slope side of the garden to prevent the soil from washing away after a storm. Use the soil that was removed from the upslope side of the garden and add it to the down-slope side. The bottom of the garden should be fairly level to maintain the storage area inside the garden. Slope the edges of the garden, but do not make them too steep. Steep slopes tend to erode easily. Mulch or a ground cover will help to stabilize the soils.

If the selected area is lawn, you will have to remove the turf. Either you can use this in another area of your yard, or it can be composted to help improve your soils. If your soil drains well, simple soil preparation is all that is needed. Incorporate compost into the garden bed to improve the quality of the soil. If your soils are clay, soil replacement is probably in order. You may also want to add a reservoir of gravel at the bottom of the garden bed, or add tiles or an under-drain that leads to another area. This will avoid having your rain garden become waterlogged. The idea is to create a living sponge of soil, plants, roots and mulch, not a soggy bog.

Grade the surface of your prepared rain garden bed in such a way that the water entering it can spread out over a large flat area and soak into the soil. This may involve removing a lot of soil. When your ponding area is ready and the soil is nice and loose, it is time to plant. You can prepare a rain garden bed and then cover it with mulch until later; then, plant through the mulch. On the other hand, you can plant immediately, and then mulch the plants. The choice is yours. The sooner the plants are in, the faster your rain garden will become established.



Planting the rain garden

While rain gardens are a highly functional way to help protect water quality, they are also gardens and should be an attractive part of your yard and neighborhood. Think of the rain garden in the context of your home's overall landscape design. When choosing plants for the garden, it is important to consider the height of each plant, bloom time and color, and its overall texture. Use plants that bloom at different times to create a long flowering season. Mix heights, shapes, and textures to give the garden depth and dimension. This will keep the rain garden looking interesting even when few flowers are in bloom. A small tree or a few flowering shrubs may be included in the rain garden if it is large enough. It is

important to note that plants in a rain garden will have to tolerate fluctuating levels of soil wetness. Your rain garden will have a couple of different wetness zones in it. In the deepest part of the garden, you can put plants that withstand a couple of days of standing water at a time. In the shallower parts and on the edges, you can put more typical landscape plants. Drought tolerant plants can be planted on the perimeter. Many native plants make great candidates for the rain garden and are generally adapted to local growing conditions. Introduced ornamentals may also be used as long as they have no invasive characteristics or problem pests.

When laying plants out, randomly clump individual species in groups of 3 to 7 plants to provide a bolder statement of color. Make sure to repeat these individual groupings to create repetition and cohesion in a planting. This will provide a more traditional formal look to the planting.

Use container-grown plants with a well-established root system. Dig the hole for each plant twice as wide as the plant container and deep enough to keep the crown of the young plant right at the soil line, as it was in the container. After you put the plant in the ground, gently tamp the soil around the roots to eliminate air pockets. Water immediately after planting, and then water weekly, to a depth of several inches, until the plants are well established. After the first growing season, you should not need to water the plants unless there is a lengthy drought. Add mulch two inches thick, keeping it off the crowns of the plants. Use mulch that will not float away; hardwood mulch is best.

The following plants are some of those that are suitable for inclusion in a rain garden:

TREES					
Name	Exposure	Moisture	Mature size	Bloom	Comments
Acer palmatum Japanese maple	Sun to part shade	Moist	5'-25' depending on cultivar	Not significant	Graceful small tree; green or red leaves, some with deeply dissected leaves; excellent fall color
Acer rubrum Red maple	Sun to part shade	Dry to wet	40'-60'	April	Shallow root system; attractive red flowers and fruit; tolerates moist or dry sites; red/yellow/orange fall color
Betula nigra River birch	Sun to part shade	Dry to wet	40'	Not significant	Tolerates wet feet or upland site; interesting catkins; beautiful peeling bark; yellow fall color
Carpinus caroliniana American hornbeam	Part sun to shade	Moist	20'-30'	May	Tolerates sun if soil is moist; tolerates periodic flooding; unique fluted silver-gray bark; yellow, red, or orange fall color
Cornus kousa Kousa dogwood	Sun	Moist to dry	25'-30'	June/July	Resistant to dogwood anthracnose; large white bracts appear after the foliage; reddish purple fall color
Magnolia virginiana Sweetbay magnolia	Sun to shade	Wet to moist	15'-20'	June	Large white fragrant flowers; small multi-stemmed tree; red berries; semi-evergreen; will tolerate wet soils
Nyssa sylvatica Tupelo	Sun	Wet to dry	30'-50'	Not significant	Tolerates seasonal flooding or dry, rocky uplands; blue-black berries taken by birds; brilliant scarlet fall color

SHRUBS					
Aronia arbutifolia *Red* chokeberry	Sun to part shade	Dry to wet	4'-10'	May/June	White flowers with red stamens; bright red, edible berries persist in winter; salmon to scarlet fall color
Aronia melanocarpa Black chokeberry	Sun to part shade	Dry to wet	3'-5'	May/June	White flowers with red stamens; black berries persist in winter; dark purple-red fall color
Callicarpa americana Beautyberry	Sun to part shade	Moist	3'-8'	July/August	July/August
Clethra alnifolia Sweet pepperbush	Sun to part shade	Moist to dry	6'-8'	July/August	Very fragrant white or pink flowers; yellow fall color; butterfly nectar plant
Cornus stolonifera Red twig dogwood	Sun to part shade	Moist	6'-8'	June	White flowers; blue or white berries; red/maroon fall color; scarlet twigs in winter
Hamamelis x *intermedia* Hybrid witchhazel	Sun	Moist to dry	12'-15'	December/April	Winter bloomers in yellow, red or copper; in bloom for 4 to 6 weeks; many cultivars
Hamamelis virginiana Witchhazel	Sun to part shade	Moist to dry	12'-15'	October	Tolerates irregular flooding or dry sites; yellow fragrant strap-like flowers; yellow fall color
Hydrangea arborescens Smooth hydrangea	Sun to part shade	Moist to dry	3'-8'	June/July	Creamy white flowers on new wood; cv. Annabelle has large flower heads; cv. White Dome is a lace-cap type
Hydrangea paniculata Panicle hydrangea	Sun to part shade	Moist to dry	5'-12'	July/September	Large panicles of white flowers turn to pink by fall; blooms on new wood; many cultivars available

Hydrangea quercifolia Oakleaf hydrangea	Sun to part shade	Moist to dry	5'-8'	July	Pyramidal white flower heads age to mauve; large oak-shaped leaves with deep red fall color; shaggy reddish bark is attractive
Ilex glabra Inkberry	Sun to part shade	Wet to dry	3'-6'	Summer	Slow-growing evergreen; creamy-white flowers; tolerates wet soils; need male & female for berries
Ilex verticillata Winterberry	Sun to part shade	Wet to moist	6'-10'	June/July	White flowers; yellow fall color; need male & female for scarlet berries; tolerates wet soil
Itea virginica Sweetspire	Sun to part shade	Moist	4'	May/June	Fragrant white flowers; fall foliage garnet to purple
Leucothoe racemosa Fetterbush	Partial shade to shade	Wet to moist	4'-6'	May/June	White drooping flowers; evergreen leaves turn red/purple after frost
Physocarpus opulifolius Ninebark	Sun	Moist to dry	8'-10'	May/June	Cultivars are better than the species; 'Diablo' has purple foliage while 'Dart's Gold' has yellow foliage; drought tolerant
Rhododendron viscosum Swamp azalea	Sun to part shade	Wet to moist	6'-8'	July/August	Intensely fragrant white flowers; bronze fall color
Sambucus canadensis Elderberry	Sun to part shade	Wet to moist	6'-8'	June/July	Large white flower clusters; ornamental, edible purple berries; fast-growing
Sambucus nigra European elderberry	Sun to part shade	Moist	10'-15'	June	Larger than S. canadensis; numerous cultivars with colorful foliage
Viburnum dentatum Arrowwood	Sun to part shade	Moist to dry	8'-10'	May/June	Creamy white flowers; blue berries; crimson fall color

Viburnum sieboldii Siebold viburnum	Sun to part shade	Moist to dry	10'-15'	May/June	Creamy white flowers are followed by bright red berries which change to black, relished by birds
Viburnum trilobum American cranberrybush	Sun to part shade	Moist to wet	8'-12'	May	White flowers; edible red berries; yellow-purple-red fall color
PERENNIALS					
Amsonia hubrechtii Willowleaf Bluestar	Full sun to partial shade	Moist to dry	18"-3'	May/June	Trumpet shaped light blue flowers, delicate bottlebrush leaves give this plant an attractive, shrub-like appearance; leaves turn a beautiful yellow in fall
Andropogon gerardii Big bluestem	Sun	Dry to moist	3'-5'	August/September	Prairie grass with purple flowers; blue-green blades turn tawny in fall; tolerant of acid soil, sandy soil, flooding and drought
Aquilegia spp. Columbine	Sun to part shade	Moist	2'	May/June	Flowers attract hummingbirds and butterflies, elegant blue-green divided foliage
Asclepias incarnata Swamp milkweed	Sun	Wet to moist	2'-4'	June/July	Pink blooms in midsummer; butterfly nectar plant; monarch butterfly host plant
Aster divaricatus White wood aster	Part shade to shade	Moist to dry	1'-3'	September/October	Good for dry shade or moist woods; white flowers attract butterflies; attractive massed at woodland edge
Aster laevis Smooth aster	Sun	Moist to dry	2'-4'	August/October	Pale blue flowers attract butterflies; mildew free

Baptesia australis Blue false indigo	Sun	Moist to dry	3'-5'	May/June	Indigo-blue showy flowers on blue-green, compound foliage make a striking show; effect is shrub-like
Chelone glabra White turtlehead	Sun to part shade	Wet to moist	2'-3'	September/October	White snapdragon type flowers; good fall bloomer
Chelone oblique Pink turtlehead	Sun to part shade	Wet to moist	1'-4'	September/October	Pink snapdragon type flowers
Cimicifuga racemosa Bugbane	Part shade to sun	Moist	5'-6'	July/September	Bold woodland edge plant with white, wand-like blooms; handsome foliage
Coreopsis verticillata Tickseed	Sun	Dry to moist	2'-3'	June/July	Yellow mini-daisies are held above delicate mound of lacey foliage; slowly spreading to form a small colony
Dennstaedtia punctilobula Hay scented fern	Sun to part shade	Dry to moist	1'-3'	n/a	Spreads rapidly; fragrant, light-green foliage turns yellow in fall
Echinacea purpurea Coneflower	Sun	Moist to dry	3'	July/August	Pink petals surround a bronze cone; a butterfly magnet
Eupatorium maculatum Joe Pye weed	Sun	Wet to dry	5'-8'	July/August	Huge, dusty-pink flowers attract butterflies; good fall color
Eupatorium rugosum White Snakeroot	Part shade to sun	Wet to moist	3'-4'	September	Long lasting, fuzzy white flower clusters; cv. Chocolate has purple/brown foliage
Filipendula rubra Queen of the prairie	Sun	Moist	4'-6'	June/July	Prefers well-drained evenly moist soils but will tolerate wet soils; foamy clusters of tiny pink blooms.

Geranium spp. Perennial geranium	Sun to part shade	Moist to dry	10"-18"	May/July	Many species and cultivars; colors range from white to pink to blue
Hemerocallis spp. Daylily	Sun to part shade	Moist to dry	2'-3'	Summer	Many colors; extend season with early, mid, and late blooming cultivars; drought tolerant
Heuchera spp. Coral bells	Part shade to sun	Moist	1'-1.5'	May/June	Pink, coral or white flowers on spikes, many cultivars with purple/silver mottled foliage
Hibiscus moscheutos Rose mallow	Sun	Wet to moist	3'-5'	July/September	Shrub-like plant; very large pink or white flowers; hummingbird nectar plant; can grow with roots in water
Hosta spp. Hosta	Part shade to sun	Moist to dry	6"-3'	Summer	Hosta come in many sizes and foliage colors; mostly grown for foliage, their flowers are quite attractive; remarkably drought tolerant once established
Iris siberica Siberian iris	Sun	Moist to dry	3'-4'	May/June	Many colors, foliage turns apricot yellow in fall
Iris versicolor Blue flag	Sun	Wet to moist	2'-3'	May/June	Deep blue blooms on attractive grass-like foliage; can grow with roots in water
Liatris spp. Gayfeather	Sun	Dry to moist	2'-4'	July/August	Tall stems carry purple flowers that open from the top down; foliage is grass-like; very drought tolerant
Lobelia cardinalis Cardinal flower	Part shade	Wet to moist	3'	August	Will grow in full sun if kept moist; brilliant scarlet flowers attract hummingbirds

Lobelia siphilitica Great blue lobelia	Part shade	Moist	2'-3'	August/September	Blue flowers remain in bloom for 3 to 4 weeks
Matteuccia pennsylvanica Ostrich fern	Sun to shade	Moist	4'-5'	n/a	Plants form colonies by underground rhizomes; tall, gracefully arching fronds
Monarda didyma Beebalm	Sun to part shade	Moist	3'-4'	July/August	Many cultivars available in a range of colors and mildew resistance; forms small colonies; attracts hummingbirds and butterflies
Osmunda cinnamomea Cinnamon fern	Shade to sun	Moist	3'-5'	n/a	Interesting cinnamon colored spore fronds appear in the center of the plant; needs constant moisture if in sun
Panicum virgatum Switch grass	Sun	Dry to moist	3'-6'	July/September	Many good cultivars available; tolerates flooding; airy seed heads in summer
Rudbeckia spp. Black eye Susan	Sun	Dry to moist	2'-5'	June/September	Many different species offer color through the season; both annual and perennial
Schizachyrium scoparium Little Bluestem	Sun	Dry to moist	3'-4'	August	Lovely native grass, blooms in August and turns buff/golden in fall; dense root system; tolerant of poor soils
Solidago spp. Goldenrod	Sun	Dry to moist	18" – 4'	July/October	Many species available; does not cause hay fever; great late season color
Tiarella cordifolia Foam flower	Part shade to sun	Moist	1'	May	Spikes of foamy white flowers in spring; forms a small colony
GROUNDCOVERS					

Ceratostigma plumbaginoides Leadwort	Sun to shade	Moist to dry	< 1'	August/September	Shrubby groundcover spreads rapidly in loose soil; drought tolerant; brilliant blue flowers; leaves red in fall and spring
Chrysogonum virginianum Green and Gold	Partial shade	Moist to dry	< 1'	May/June	Golden daisy-like flowers continue sporadically until frost; spreads easily
Epimedium grandiflorum Bishop's Hat	Partial shade to shade	Moist to dry	1'	May/June	Foliage remains green most of the year, once established it will tolerate dry conditions
Phlox subulata Moss Phlox	Sun to part shade	Moist to dry	< 1'	April/May	Evergreen; flower colors range from blue to pink and white; forms mats

Maintaining the rain garden

Just like any other garden, your rain garden will need some basic maintenance to keep it healthy and functioning.

- Mulch annually to suppress weeds and to keep soils moist, which allows for easy infiltration of stormwater; un-mulched surfaces may develop into a hardpan, which impedes water infiltration. Before applying new mulch, remove the old mulch. Alternately, loosen up the old mulch with a rake and just top dress it with new mulch. The depth of the mulch should never exceed 3".
- Weed your garden, especially during plant establishment; newly planted species may have a tough time competing with weeds. Once plants become established, less weeding will be required.
- The plants in your rain garden will need to be watered regularly during establishment to ensure healthy growth. Once established, plants should be watered in long periods of drought. Water deeply once or twice a week; avoid frequent shallow watering.
- Keep your garden healthy and clean. Rain gardens should be periodically cleared of dead vegetation and any debris that may collect. Replanting may be necessary over time. If a plant is not doing so well in one location of the garden, it may have to be moved to a wetter or dryer area.

Enjoy your rain garden and your contribution to water quality in your neighborhood.

Written by: Roberta Clark
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Adapted from:

- How Does Your Garden Grow: A Reference Guide to Enhancing Your Rain Garden. LID Manual, Prince Georges County, MD, Dept. of Environmental Resources
- Rain Gardens: A Household Way to Improve Water Quality in Your Community. University of Wisconsin Extension and Wisconsin Department of Natural Resources
- Rain Gardens: A How-to Manual for Homeowners. University of Wisconsin Extension and Wisconsin Department of Natural Resources
- Backyard Rain Gardens. North Carolina Cooperative Extension